

DOI: [10.38027/ICCAUA2022EN0044](https://doi.org/10.38027/ICCAUA2022EN0044)

A Study on the Female Architects' Approaches to Design in the 21st Century

* Research Assistant Ezgi Uyar Sun¹, Dr. Dilek Yasar²

Istanbul Aydin University, Faculty of Architecture and Design, Istanbul, Turkey¹

Istanbul Aydin University, Faculty of Architecture and Design, Istanbul, Turkey²

E-mail¹: ezgisun@aydin.edu.tr, E-mail²: dilekyasar@aydin.edu.tr

Abstract

The female architects play an active role in the 21st century architecture, which is characterized by a quest of new forms, albeit they are few in number in the sector. Accordingly, the present study focused on the design approaches of today's female architects, and furthermore, the sources used in their designs, their focal concepts, and the formal language of their forms were investigated. In this context, ten well-known contemporary female architects were included in the scope of the study. A dual methodical pattern, namely textual analysis and visual analysis, was used for the purposes of the study. The texts of female architects, which described their projects, were conceptually analyzed using the textual analysis method, where their formal language was analyzed by means of the visual analysis method. The data were then organized into data sets and presented in tabular format. The results of the present study indicated that the female architects mostly made use of nature and socio-cultural elements in their designs and considered the data therefrom as an important input to be incorporated into their design. On the other hand, although they had similar points of departure in terms of design, they did not have a common language in terms of form.

Keywords: Women Architects; Design Approaches in the 21st Century; Design Resources.

1. Introduction

Architecture was shaped within the framework of a patriarchal approach for centuries. The fact that the role assigned to women was primarily that of a wife and mother, and the belief that architecture was a profession that could only be practiced by men, prevented women from taking part in this discipline. Although the Renaissance architectural texts prescribed that architecture required both female and male qualifications (Fowler and Wilson, 2004), women were excluded from architecture schools and professional organizations in many countries until the beginning and even in the middle of the 1900s (Dostoglu, 2016). Women would be allowed to trace the plans and write specifications at the most until the late nineteenth century (Caven, 2004). During the late nineteenth and early twentieth centuries, when women were able to get a university degree in architecture, albeit difficult, some women could have opened their own offices and hired other women (Allaback, 2008).

The female architects architects (Devlin, 1997), who had to struggle with sexism, a fundamental type of cultural discrimination, were able to reverse the society's belief over time that architecture was a masculine cause. As a matter of fact, relevant studies suggest that the number of female architects increases each day, and a balance has almost been achieved as regards the number of female and male students, especially in the architecture schools. On the other hand, the recognition of female architects in the architectural circles and in the public is even more limited compared to their male counterparts, despite the said increase in numbers (Dostoglu, 2016).

2. Female Architects in the 21st Century

The architecture was predominantly considered a profession that men could practice until the end of the 19th century, due to the restrictive and discriminatory conduct of the respective societies based on economic, social, and cultural factors. The female architects, who, until recently, had to fight an uphill struggle both in the sector and in academies, still face to various difficulties, yet they are much more active than a century ago. Records published by the regulatory bodies also confirm the said development. For instance, as of 19 November 2020, 29% of 43,059 architects registered with the Architects Registration Board (ARB) in the United Kingdom (UK) were women. Notwithstanding above, the same records also indicated that 50% of the architects aged below 30 years were female (URL 1). Therefore, female architects now play an active role in shaping the built environment as much as male architects do. A similar result can be seen in the field of architecture education as well. The United States National Architectural Accrediting Board (NAAB) reported in 2019 that the gender breakdown in NAAB-accredited programs was 13,285 (51%) male students and 12,776 (49%) female (URL 2). This is consistent with the reports in Turkey. The ratio of female students, who were placed in the faculties of architecture in public universities, was 55%, according to the data reported by the Higher Education Institution in 2021. This rate was even higher with regard to the foundation universities.

The quantitative data above makes it possible to suggest qualitative remarks. In the light of the above, it is reasonable to suggest that the female architects, no more a minority group, have played an active role in shaping

the architecture of the twenty-first century. The female architects have contributed to contemporary architecture both intellectually, and by their construction methods, and furthermore, the buildings of their design attracted a wide audience. In this context, Zaha Hadid, the winner of the Royal Gold Medal of the Royal Institute of British Architects (RIBA); Pakistani Yasmeen Lari and Farshid Moussavi, the winners of the Jane Drew Award; Denise Scott Brown, one of the pioneers of the post-modern architecture; Jeanne Gang, well-known for her sustainable design techniques; and Amanda Levete, who designed the world's first magnetized fusion power plant for the UK, inter alia, can be given as examples of the rise of women in architecture.

3. Study Method and Procedure

Architectural texts of ten female architects, who were included in the scope of the study, were used as the basic sources of information, due to the fact that they included empirical evidence as a rich source of information. These texts were analyzed so as to investigate the problems as defined by and the data as considered design input by the designers. Furthermore, the forms, i.e., one of the most important elements in determining the quality of an architectural design, were analyzed by the visual analysis method and the type of forms the architects inclined to were determined. The method is explained in more detail below in the respective subheadings.

3.1 Research Field

Ten female architects were determined as the research field of the present study and 60 different projects designed by those architects during the post-1990 period constituted the focus of the research. For the purposes of the present study, relatively well-known architects were selected from different nationalities, including American, Mexican, Iranian, and Irish, etc. The projects of these selected architects were limited to cultural buildings on the grounds that those included diverse contexts. In this context, personal projects, including hotels, residences, and offices were excluded from the study, while cultural buildings, including museums, art centers, galleries, theaters, opera and ballet halls, trade show and congress centers, and exhibition halls were analyzed. The selected architects and the associated buildings are shown in Table 1.

Table 1. Selected Architects and Associated Buildings

ARCHITECT	BUILDING
Zaha Hadid	Astana Expo 2017
	Beethoven Concert Hall
	Changsha Meixihu International Culture and Art Centre
	Eli & Edythe Board Art Museum
	Glasgow Riverside Museum of Transport
	Guangzhou Opera House
	Heydar Aliyev
Jeanne Gang	Longgang Cultural Centre
	Arkansas Arts Center
	Writers Theatre
	Bengt Sjostrom Starlight Theatre
	Kaohsiung Maritime Cultural & Pop Music Center
	Taipei Pop Music Center
Francine Houben	National Kaohsiung Centre for the Arts
	La Llotja Theatre and Conference Centre
	Futian Civic Culture Center
	Oldham Coliseum Theatre
	KRONA Knowledge and Cultural Centre
	Xiqu Chinese Opera Centre
Farshid Moussavi	Ismaili Center Houston
	Museum of Contemporary Art Cleveland
	Guggenheim Competition, Helsinki
	Spanish Pavilion at the 2005 World Expo, Aichi, Japan
	Torre Vieja Municipal Theatre and Auditorium
Amanda Levete	Paisley Museum
	MAAT Lisbon
	Centre for Music London

	MPavilion Melbourne
	Mumbai Museum
Odile Decq	New Cyprus Museum
	Tangshan Fangshan Geopark Museum
	Macro Museum
	Wrocław Museum of Contemporary Art
	L. Museum
	Nanjing Jiangning District Library & Cultural Center
	Linz Musiktheater
Elizabeth Diller	Tarrkarri – Centre for First Nations Cultures
	Museum Of Image & Sound, 2022
	United States Olympic & Paralympic Museum
	Prior Center for the Performing Arts
	The new Art Gallery of Nova Scotia
	Shenzhen Opera
Annabelle Selldorf	Hauser & Wirth 22nd Street
	Shaker Museum
	Rubell Museum
	The Museum of Contemporary Art San Diego
	David Zwirner 20th Street
	Steinway Hall
Alison Brooks	Sara Hildén Art Museum Tampere
	The Smile London
	M.K. Čiurlionis Concert Centre Kaunas
	Hammerfest Arctic Culture Centre
	Helsinki Central Library
	Olympicopolis: Sadler's Wells & Smithsonian Stratford
Kimberly Dowdell	Southport Theatre and Convention Centre
	The Dalí Museum
	Kentucky International Convention Center
	Hampton Roads Convention Center
	National Air and Space Museum Steven F. Udvar-Hazy Center
	Florida International University Patricia and Phillip Frost Art Museum

3.2 Research Tool

Two different tools were used for the purposes of the study. The first tool was the texts by the ten selected female architects regarding their designs. These texts were conceptually analyzed. The second tool was the forms of the buildings included in these texts and they were analyzed visually.

3.3 Method

A dual methodological pattern, including textual analysis and visual analysis, was used in the present study. The textual analysis method was based on the briefs written by the architects on their respective projects. These briefs were conceptually analyzed in the context of the data, which were considered design input, and the factors, which paved the way towards the form. For example, a review of Zaha Hadid's brief on the Riverside Museum in Glasgow indicated that the architect wanted to symbolize the dynamic relationship between shipbuilding, seafaring, and industrial heritage based on the unity of the city and the river, and therefore relied upon socio-cultural data. Furthermore, the architect considered the natural environmental factors, including climate and geography and expressed them through certain concepts such as 'acting as a mediator between the city and the river', 'creating the landscape vista', 'ensuring visual continuity', 'bringing natural light inside' and 'providing protection from prevailing winds'. In the visual analysis method, the forms designed by the architects were analyzed on the basis of visual data and the collected data were broken down into concepts. An example of the application of the method is provided in Figure 1.

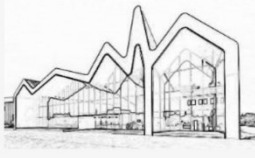
Building / Architect	Concerns	Forms
Glasgow Riverside Museum of Transport / Zaha Hadid 	Symbolizing dynamic relationship between Glasgow and the ship-building, seafaring and industrial legacy of the river Clyde. Becomes a mediator between city and river. establishing a clear connection between its exhibits and their wider context. Allow visitors to build up a gradual sense of their external context. Reduce exposure to prevailing winds. Allow light to flood through the main exhibition space. Create a seamless continuity with the river.	A sectional extrusion open at both ends. Encapsulated a wave or pleat

Figure 1. An Example for the Application of the Method

3.4 Organization of Data and Conversion to Data Sets

The data from the analysis of sixty different structures by the ten female architects were converted into and presented in the data sets within the scope of the study (Table 2). The design problems as considered by the architects, the factors incorporated into their designs, and the form approaches they adopted/produced were presented in the said datasets. Notwithstanding above, it should be noted that these data were not comprehensive, or inclusive of all the buildings by the selected architects. Nevertheless, this step was instrumental in providing an overview of the design approaches of the selected female architects.

Table 2. Analysis Data on Selected Buildings

RESULTS		
Architects	Concerns	Forms
ZAHA HADID	A desire to create an unusual image; Reflecting socio-cultural values; Responsiveness to function; Making use of geography; Using Metaphor and analogy; Urban factors	Disproportionate exterior surfaces, non-basic geometries, asymmetrical axes, and fragmented forms as well as free forms that establish close relationships with nature
JEANNE GANG	Ecologic concerns; Climate-related factors; Making use of geography; Conserving and making use of the biotic environment; Responsiveness to function; Urban factors	Often dynamic forms established by regular repetitions, unity, harmony, proportional geometries, and unitary units
FRANCINE HOUBEN	Responsiveness to function; Making use of physical environment data; Climate-related factors; Conserving and making use of the biotic environment; Reflecting socio-cultural values; Ecologic concerns; Utilizing topography	Nature-inspired free forms as well as monolithic forms of expanding and proportional geometries
FARSHID MOUSSAVI	Reflecting socio-cultural values; Urban factors; Responsiveness to function; Ecologic concerns, Ensuring physical and sensory comfort of the users	Forms with predominantly positive-negative balance of form, consisting of regular repetitions, proportional geometries, and multiple surfaces
AMANDA LEVETE	Reflecting socio-cultural values; Urban factors; Ensuring physical and sensory comfort of the users; Using Metaphor and analogy; Factors regarding building and construction	Inorganic forms with folds and curves along with dynamic forms that change direction and rotate
ODILE DECQ	Reflecting socio-cultural values; Urban factors; Ensuring physical and sensory comfort of the users; Responsiveness to function; Conserving and making use of the biotic environment, Using topography	Overlapping, wavy, curved, continuous, and free forms that establish close relations with nature

ELIZABETH DILLER	Making use of geography; Reflecting socio-cultural values; Using topography; Designing according to barrier-free design criteria	Non-basic geometries, asymmetrical axes, forms consisting of unique surfaces as well as compact forms created by means of a metaphorical approach
ANNABELLE SELLDORF	Responsiveness to function; Using physical environment data; Ecological concerns; Making use of geography; Reflection of socio-cultural values	Basic forms dominated by a quest for plain and simple visual order
ALISON BROOKS	Reflecting socio-cultural values; Making use of geography; Factors regarding building and construction; Making use of metaphor and analogy; Ensuring physical and sensory comfort of the users; Ecologic concerns; Using physical environment data	Curved, curly, and continuous analogical forms as well as forms established by unitary units with a positive-negative balance of form
KIMBERLY DOWDELL	Responsiveness to function; Climate-related factors; Making use of geography; Urban factors; Conserving and making use of the biotic environment; Factors regarding building and construction	Euclidean forms with geometric extrusions, regular, and proportional geometries as well as analogical forms

4. Findings

The results of the present study are indicative of the fact that the selected female architects most frequently focused on natural environment issues, including climate, biotic environment, geography, and ecology. The concerns with regard to natural environment, which were characterized by certain concepts, including responding to harsh climatic conditions; preservation of rural characteristics; being surrounded by rivers, mountains and lakes; minimizing energy and resource consumption, were the primary factors that the selected female architects took into consideration in the course of their design efforts.

Another remarkable consideration was their concerns about reflecting the socio-cultural values. The concern to preserve and reflect the history, traditions, and values of the relevant city or region was one of the primary factors expressed by almost all the selected architects.

Branding the city, economic development, and creation of urban focal points were also among the prominent factors considered by the selected architects.

It was seen that female architects also considered factors related to the built environment as a design input. In this context, the selected female architects considered certain factors as important data, including the location in a commercial area or in a historical surroundings or proximity to important buildings, in the course of design.

The selected female architects also prioritized the function, an ancient design problem in the history of architecture. Functional concerns, including spatial organization, and physical and sensory comfort were among the factors emphasized by the female architects in their texts.

The analyzed texts were also suggestive of the female architects' desire to create a remarkable, extraordinary, and powerful form. Accordingly, the selected female architects rather resorted to analogies or metaphors and often inspired by the nature. The female architects, who focused on building- and construction-related factors with an aim to create an unusual structure, shell, or material, made use of technology not only in the design but also in the production of the form.

Although the factors that led women architects towards form and shaped their designs were similar, it is difficult to say that they had a common language in terms of form. Furthermore, it was seen that the forms, in which function is prioritized, were mostly based on Gestalt principles, including proximity, similarity, and closeness and/or basic design concepts such as harmony, balance, unity, repetition, and symmetry. The forms presented organic images with curvilinear lines generally created on the basis of metaphors and analogies in the designs, which prioritized the socio-cultural and urban factors. Nevertheless, those forms varied by geography and the architect's approach.

5. Results and Discussion

Aimed to understand the design approaches of the female architects in the 21st century, the present study reviewed sixty different cultural structures of the ten selected female architects, and sought answers to the questions, including what they identified as design problems, through which factors they shaped their designs, and what was the formal language of the resultant forms. An inductive method was followed in the study, and accordingly, it was considered that a general framework could be generated on the basis of the individual analysis of the samples.

The results of the study suggested that the selected female architects considered multiple factors in their designs. Among those, the female architects most frequently emphasized the natural environment factor. Approaches such as incorporating geography into design, making use of existing vegetation, using climatic data, emulating and being inspired by nature were indicative of how close the female architects were to nature and that they used nature as a source of design. For the female architects, the nature was beyond a design problem to deal with, it was an element that must be protected, cared for, and incorporated into the design. As a matter of fact, they were inclined towards free forms that relate to nature in the forms of their produce.

Readings through the texts suggested that the social context was also very important for the female architects. In particular, reflecting socio-cultural values in designs, and accordingly, strengthening the relationship between the city and the citizens, and reinforcing the relations at the intersection of the city and society were the prioritized considerations in the design approaches of the female architects. It was seen in the designs, which emphasized cultural values, that patterns and geometries specific to the relevant region, city, or country were reflected by the form, and occasionally there were forms produced with curvilinear and/or asymmetrical axes on monumental scales. While shaping their designs, the female architects were also inspired by the built environment. The data collected from the built environment surrounding the construction area was an important resource for architects in terms of presenting an original design. The forms produced on the basis of the data collected from above sources seemed to have either coalesced, or conflicted with the environment.

Functional considerations, including spatial organization and providing users with physical and sensory comfort were also attached importance by the selected female architects. The female architects frequently expressed certain concerns, including responding to the physical needs at the optimum level, arousing strong emotions in the users, or offering surprising spaces. In this context, the female architects seemed to have mostly strived for creating rich and unusual spatial arrangements and introducing interior organizations that would refer to the minds of the users. In cases where the function was taken as a starting point in the design, the female architects mostly resorted to Euclidean forms.

The results suggested that the female architects made maximum use of technology in resolving building and construction related problems. Technology, an important component of architecture like science and art, played an active role in both the design and production stages of construction components such as shell, structure, and material of the selected female architects.

In conclusion, it is reasonable to suggest the female architects of the twenty-first century identified nature, socio-cultural and social elements, and the built environment as the prominent sources of design, shaped their designs with the data from the foregoing, and observed the balance between form and function. In that regard, it should be noted that the approaches of the female architects towards design were not dramatically different from that of Frank Gehry, Norman Foster, Renzo Piano, Daniel Libeskind, and Rem Koolhaas and dozens of other male architects, who are frequently referred to both in the public and academic circles. Therefore, as a conclusion, being a female architect or male architect did not make any difference in shaping the architectural design in the twenty-first century with a quest for new forms.

Acknowledgements

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interests

The authors declare no conflict of interest.

References

- Allaback, S. (2008). *The First American Women Architects* (p. 3). Champaign, Illinois: University of Illinois Press. ISBN-10: 0252033213.
- Caven, V. (2004). Constructing a career: women architects at work. *Career Development International*, 9(5), 518-531. <https://doi.org/10.1108/13620430410550763>
- Devlin, A. S. (1997). Architects: Gender-role and hiring decisions. *Psychological Reports*, 81(2), 667-676. <https://doi.org/10.2466/pr0.1997.81.2.667>
- Dostoğlu, N. (2016). Dünyada ve Türkiye’de kadın mimarlar. *Mimaran*, 10(14), 11-16.
- Fowler, B., & Wilson, F. (2004). Women architects and their discontents. *Sociology*, 38(1), 101-119. <https://doi.org/10.1177/0038038504039363>
- URL 1: <https://arb.org.uk/arb-launches-new-and-improved-architects-register-nr20/>
- URL 2: <https://www.archcareersguide.com/gender-in-the-architecture-profession/>